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## ELECTRONIC COMMERCE SYSTEM AND METHOD

### BACKGROUND OF THE INVENTION

#### Field of the Invention

The present invention relates to an electronic  
5 commerce system utilizing ~~information~~ communication  
~~networks using electronic, radio and/or optical system~~  
~~as media~~, and more particularly, to an electronic commerce  
system for presenting combinations of items for sale  
~~matching with consumer preferences to sell.~~

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#### Description of the Related Art

Recently, with ~~the progress of~~ advances in the  
infrastructure ~~regarding information techniques and~~  
~~information for~~ communication networks such as the  
15 internet, ~~the~~ electronic commerce (hereinafter referred  
to as e-commerce) utilizing ~~the information~~ communication  
networks has ~~been~~ expanded ~~for various products.~~

Meanwhile As is known, ~~some products among products~~  
~~actually dealt,~~ a product may exhibit a newly added value  
20 when sold in a combination of a plurality of the with  
other products. In the specification of the present  
invention, ~~each product is called~~ the term "item" refers  
to a product in a combination which is a component of  
such products that exhibit the newly added value when by  
25 being combined with other products. For example, fashion  
goods and or furniture is are often sold ~~on the assumption~~  
that a plurality of items is combined in combinations.

~~A combination of an item with other items is capable of motivating a~~  
 A consumer may be motivated to purchase the  
 an item as part of a combination with other items. That  
 is, in some products such as the fashion goods and furnishes  
 5 furniture, a specific value may be added when how to combine  
~~the products offered for sale are combined often has a~~  
 specific value.

However, ~~the~~ e-commerce that only presents each  
 item ~~has~~ individually does not sufficiently ~~cope~~ cope  
 10 with sales of items such as fashion goods which exhibit  
~~exhibiting~~ specific characteristics and various values  
when offered in a combination ~~thereof such as fashion~~  
 goods.

For example, when a consumer wants to purchase pants  
 15 that match well ~~well-matching with a newly found~~ wonderful  
 sweater, in ~~the~~ conventional store sales, the consumer  
 searches and tries on a range of items limited to those  
 items displayed in ~~a the~~ store ~~for an item satisfying~~  
 her/his requirements, while trying on the items displayed  
 20 ~~in the store.~~

However, in ~~the~~ an e-commerce system that offers  
~~characterized by having various products for sale,~~ a  
 consumer needs to find a desired item from a list ~~having~~  
with a huge number of items. Further, it is not easy  
 25 ~~for to use an information terminal used in the e-commerce~~  
 to present ~~to the consumer~~ elements such as colors and  
touch to the consumer ~~of clothes despite,~~ though such

~~elements-being~~ are important in choosing an item. Therefore, it is difficult for the consumer to choose an item that really-satisfying satisfies her/his requirements.

5        There is thus a problem that ~~the-conventional e-commerce-system systems are-is~~ not able to sufficiently ~~offerdeal with items-of~~ in a desired ~~which-a~~ combination ~~is important as well as consumer preferences,~~ such as sales of fashion goods.

10        Further, there is ~~considered~~ known a method for presenting to consumers a database of combinations of items formed by experts. However, there is a low probability that individual preferences of a consumer matches those of a specific expert for-the items in which  
 15        ~~individual preferences are important such as fashion goods have a low possibility that a preference of a consumer matches only to a specific expert.~~ Rather, it is common ~~rather usual~~ for a consumer to buy a casual-wear item at a store ~~of an expert A~~ and to buy a sophisticated-wear  
 20        item at another store ~~of an expert B or C.~~ The stores A-C may offer items selected by professionals. Thus, the preference of a consumer is generally represented by a complicated combination of scenes and experts. Therefore, an e-commerce system using only the database  
 25        of combinations of items formed by experts ~~is does~~ not ~~able to achieve an e-commerce system satisfying~~ satisfy requirements of consumers with respect to items ~~of~~ for

which a combination is important, such as clothes. In the e-commerce system that is not able to cope with preferences of consumers sufficiently, there is a problem that a rate of returned items is not negligible and must  
 5 be factored into~~in cost factor~~ considerations of costs.

#### SUMMARY OF THE INVENTION

It is an object of the present invention to provide an e-commerce system capable of presenting combinations  
 10 of appropriate items matching with a preference of a consumer, even when the consumer is not able to obtain sufficiently detailed information on the items, and thereby enabling a rate of returned items to be decreased.

That is, in the e-commerce system of the present  
 15 invention, a seller registers items ~~composing a product in a combination thereof~~ with an item database. Based on registered items, a coordinator coordinates combinations of the items and stores the combinations of the items in a ~~coordinated database~~ coordination database.  
 20 The ~~coordinate database~~ coordination database is opened to the public for consumers to ~~make them to~~ place orders, and after ~~the~~ a transaction is completed, ~~the~~ payments are received from an account of a corresponding consumer and made ~~and to the seller are performed~~. It is thereby  
 25 possible to present combinations of items coordinated by coordinators with detailed knowledge, sophisticated sensitivity and high skills to consumers who do not have

detailed knowledge ~~on~~ of the registered items. Accordingly, choosing and purchasing ~~an item~~ from among the combinations is ~~capable of~~ highly satisfying to consumer ~~consumer's shopping requirements~~. As a result, it is possible to decrease a rate of returned items. In addition, the coordinators are not limited to persons having sophisticated specific knowledge and skills, and it may be possible ~~adequately~~ for ordinary persons to join as the coordinators.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects and features of the invention will appear more fully hereinafter from a consideration of the following description taken in connection with the accompanying ~~drawing~~ drawings wherein one ~~example~~ embodiment is illustrated by way of example, in which;

FIG.1 is a block diagram of an e-commerce system according to one embodiment of the present invention;

FIG.2 is a diagram illustrating an exemplary structure of a screen for use in registering ~~coordinate~~ coordination data;

FIG.3 is a diagram illustrating an exemplary structure of a learning and ordering screen displaying a list of model pictures;

FIG.4 is a block diagram of an information filtering section of a virtual coordinator in the e-commerce system;

and

FIG.5 is a diagram illustrating an exemplary structure of an ordering screen for use in inputting ordering data.

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#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of an e-commerce system of the present invention will be described specifically below with reference to accompanying drawings. In addition, while this embodiment describes the e-commerce system dealing in fashion items, items subject to the present invention are not limited to fashion items.

FIG.1 is a block diagram of the e-commerce system according to this embodiment. A seller(s) that sells fashion items accesses to the e-commerce system via seller interface 1. Item data regarding items input by the seller via seller interface 1 is registered with item database 2. The items that the seller handles are stored in item database 2 as data of the database, and include ~~corresponding to~~ characteristics of the items such as a color and touch.

Settlement person 3 ~~who clears up the transaction of a fashion item~~ transactions. Settlement person 3 displays concepts to coordinate fashion items (hereinafter referred to as coordinate coordination concepts-concept) on concept board 4. In addition, a

person who displays the ~~coordinate concept~~ coordination concept on concept board 4 is not limited to settlement person 3, and it may be possible to receive any concept from any person such as a consumer, coordinator or seller to display.

The coordinator reads necessary information from item database 2 and concept board 4 to coordinate the items. The coordinator ~~accesses~~ teaccesses the item database 2 and concept board 4 using coordinator interface 5. Keywords to represent an image of a combination of coordinated items ~~coordinated by the coordinate~~ are stored in image-word database 6, and combinations of items are stored in ~~coordinate database~~ coordination database 7.

A consumer who purchases a fashion item ~~accesses~~ teaccesses the e-commerce system via consumer interface 8. The consumer inputs data ~~needed~~ for fitting of the fashion item, such as the height of the consumer, via consumer interface 8, and the data is stored in fitting database 9. At least one virtual coordinator 10 is assigned to the consumer. Virtual coordinator 10 retrieves combinations of items from ~~coordinate database~~ coordination database 7 according to requirements of the consumer. Then virtual coordinator 10 places an order with settlement person 3 for the item that the consumer purchases. The orders for items from settlement person 3 to the seller are stored in consumer database 11 for each consumer. The item shipped from

the seller receiving the corresponding order is sent to the consumer via shipping processing section 12 under control of the e-commerce system. Shipping processing section 12 ~~requires~~ acquires information processing ~~corresponding to the~~ for shipping from settlement person 3.

Meanwhile, the consumer receives an ordered and ~~set sent actual item which and may be returned return~~ ~~the item when if~~ it does not interest the consumer. The returned item is sent to the seller via return processing section 13 under control of the e-commerce system. Return processing section 13 acquires information for ~~the requires processing corresponding to a~~ returned item from settlement person 3. ———

Seller authentication section 21 authenticates the ~~provides functions of seller authentication and~~ communicates of communications with an account of the seller ~~and the like~~. Further, coordinator authentication section 22 authenticates the ~~provides functions of coordinator authentication and~~ communicates ~~with of communications with an account of the coordinator and the like~~. Furthermore, consumer authentication section 23 authenticates the ~~provides functions of consumer authentication and of communications~~ communicates with an account of the consumer ~~and the like~~.

In addition, ~~the the~~ e-commerce system as described above is constructed with computers or a computer system.



Further, seller interface 1, coordinator interface 5 and consumer interface 8 are each constructed with a computer which has installed browsing software such as an internet browser ~~and~~ which is accessible to the e-commerce system via ~~information~~ communication networks.

Moreover, it may be possible to open item database 2 and concept board 4 to the public on a web server to enable anyone to register an item and/or concept after registering ~~the authentication with the e-commerce system~~ in the first place.

In this case, it is possible to receive offers of items from manufactures all over the world as well as specific sellers, thereby expanding a range of coordination. Further, a coordinator is able to coordinate and provide item combinations ~~coordinated according to own concept~~. Meanwhile, a consumer is able to receive presentations of the item combinations from coordinators in accordance with concepts matching with the consumer's preference ~~from coordinators~~.

Furthermore, a seller is able to propose the coordination with concepts obtained using ~~with~~ items that the seller sells.

The operation of the e-commerce system constructed as described above is explained below. A seller ~~accesses~~ ~~to accesses~~ seller authentication section 21 via seller interface 1. The seller performs registration processing with the e-commerce system when necessary,

and is provided with ~~the~~ authentication information to access to the system. The seller ~~allowed to access~~ registers item data, in which items (clothes) that the seller wants to sell are described, with item database 2 via seller interface 1. Preferable item data includes a picture, type (such as a jacket, straight pants or long skirt), color, material (such as cotton or wool), yarn size, weave, maker's name, and price of the item. A homepage managed by the e-commerce system on the internet provides the registration service for registering the item data with item database 2. The items registered with item database 2 are assigned respective item identification numbers.

Settlement person 3 displays a plurality of ~~coordinate concept~~ coordination concepts to coordinate fashion on concept board 4. For example, settlement person 3 displays ~~an~~ a concept having contents indicative of "casual dress vivid in winter scenery" on concept board 4.

A coordinator ~~accesses~~ accesses coordinator authentication section 22 via coordinator interface 5. Then, the coordinator performs registration processing with the e-commerce system when necessary, and is provided with the authentication to access to the system. Further, the coordinator reads the ~~coordinate concept~~ coordination concepts displayed on concept board 4 via coordinator interface 5. Then, the coordinator reads item data

suitable for the concepts from item database 2, and coordinates the items such as a jacket and pants according to the coordinator's own taste of the coordinator. It is preferable to enable the coordinator to ~~operate for~~  
 5 ~~coordination~~ coordinate using only a portion of item data (for example, picture of an item). After finishing the combination of items, the coordinator selects "keyword(s)" representing an image of the combination of items from image-word database 6. Then, the  
 10 coordinator registers the combination of items as well as the keywords with the ~~coordinate database~~ coordination database 7 as ~~coordinate data~~ coordination data. Preferable ~~coordinate data~~ coordination data includes registered date, picture of a model with the items combined  
 15 by the coordinator (hereinafter referred to as a model picture), coordinator identification name, keyword(s), ~~coordinate concept~~ coordination concept, and item data. In addition, a computer graphics ~~is~~ may be available as the model picture. It is further preferable to enable  
 20 the coordinator to add new "keyword(s)" to image-word database 6.

FIG.2 is an exemplary structure of a registration screen for use by the coordinator in registering the ~~coordinate data~~ coordination data with ~~coordinate~~  
 25 ~~database~~ coordination database 7. The registration screen is composed of a model picture input frame, image-word input frame, item data input frame, fitting

data input frame and ~~coordinate database~~coordination  
database registering button. The registration screen  
 is formed of a structured document with HTML, and is  
 transferred to coordinator interface 5 by accessing to  
 5 concept board 4 and clicking a desired ~~coordinate~~  
~~concept~~coordination concept. The ~~coordinate~~  
~~database~~coordination database registering button is  
 linked with a registration execution file for ~~executing~~  
~~processing for registering the~~ ~~coordinate data~~  
 10 coordination data with ~~coordinate database~~coordination  
database 7.

When the ~~coordinate database~~coordination database  
 registering button is clicked, data input to each input  
 frame, coordinator identification name and ~~coordinate~~  
 15 ~~concept~~coordination concept identification number are  
 transferred to the e-commerce system from coordinator  
 interface 5 with HTTP (Hyper Text Transfer Protocol) as  
 well as a ~~coordinate~~ coordination registration request.

Repeating the above procedures stores a plurality  
 20 of ~~coordinate data~~ coordination data in ~~coordinate~~  
~~database~~coordination database 7. It is preferable in  
 this embodiment to arrange the plurality of ~~coordinator~~  
coordination data for each ~~coordinate~~  
~~concept~~coordination concept displayed on concept board  
 25 4.

A consumer who wants to purchase a fashion item  
 first ~~accesses to~~accesses consumer authentication

section 23 via communication networks using consumer interface 8 ~~via information communication networks~~. Then, the consumer registers ~~performs registration procedure~~ to be a purchaser. In the preferable  
 5 registration procedure, whether or not the consumer is allowed to register is judged using information indicative of reliability of the consumer. ~~obtained by employing,~~  
~~For example, the consumer authentication section 23 may~~  
utilize a credit card number and account number of the  
 10 consumer. After being authorized to register, ~~and then~~ the registration procedure is performed for the consumer to be the purchaser. In addition, it may be possible to perform the registration procedure ~~of~~ for a consumer at the time the consumer purchases an item.—

15 When the registration for the consumer ~~to be the purchaser~~ is allowed, consumer authentication section 23 assigns at least one virtual coordinator 10 to the consumer. It may be possible to assign ~~a plurality~~  
~~multiple of~~ virtual coordinators 10 for other people ~~as~~  
 20 ~~well as the consumer~~ such as a child, ~~and or~~ husband/wife thereof ~~corresponding to a request~~. Selection criteria are absolutely different ~~when~~ between a case  
~~that~~ the consumer purchases her/his own goods in  
comparison to and when ~~another case that~~ the consumer  
 25 purchases goods for other people (child, husband/wife). As described later, since virtual coordinators 10 present ordered combinations of items suitable for individual

taste, it is necessary to coordinate virtually according to individual taste and preference.

Virtual coordinator 10 ~~accesses~~ accesses ~~coordinate database~~ coordination database 7 to read the  
 5 ~~coordinate data~~ coordination data. Then, virtual coordinator 10 presents appropriate coordinate ~~concept~~ coordination concepts ~~of which the number is~~ appropriate for the consumer interface 8 being used by the consumer.

10 The consumer selects a ~~coordinate concept~~ coordination concept ~~that the consumer requires~~ among the ~~coordinate concept~~ coordination concepts displayed on consumer interface 8. When the consumer selects the ~~coordinate concept~~ coordination concept,

15 virtual coordinator 10 selects ~~coordinate data~~ coordination data associated with the ~~consumer selected~~ coordinate concept coordination concept ~~among from the~~ coordinate data coordination data stored in ~~coordinate database~~ coordination database 7. Then, the virtual

20 coordinator 10 transmits the learning and ordering screen, composed of a list of model pictures contained in the selected ~~coordinate data~~ coordination data, to consumer interface 8. When the number of model pictures is large, the learning and ordering screen is composed of a plurality

25 of pages.

FIG.3 is an exemplary structure of the learning and ordering screen displayed on consumer interface 8.

As illustrated in FIG.3, the learning and ordering screen is comprised of a plurality of model pictures, buttons (shown with "□" and "x") for ~~use in~~ inputting whether ~~or not~~ a consumer is interested in respective pictures, and learning buttons. It is preferable to present prices (sum of total cost of items, coordination fee, expenses and benefit) on the learning and ordering screen. Further, it is preferable to display to a newly-registered consumer ~~just-registered~~ whose preference is not recognized at least one model picture for each coordinator who has registered ~~registers~~ coordination data. Combinations of items proposed by each coordinator depend on the taste of the coordinator. There is a strong tendency that a consumer purchases goods of a coordinator whose taste the consumer favors. Meanwhile, there is a limitation on model pictures for ~~each of~~ which a consumer inputs an interest ~~whether or not the picture interests the consumer~~ on the learning and ordering screen. Accordingly, at the stage of learning, displaying model pictures proposed by as many coordinators as possible on the learning and ordering screen is extremely important from a point of view of accurately ~~gasp~~ grasping the preference and taste of a consumer.-

The consumer watches model pictures displayed on consumer interface 8, and inputs whether ~~or not~~ each of the pictures matches with her/his preference using a respective button. Based on each model picture, i.e.,

each ~~coordinate data~~ coordination data and an input indicative of the preference of the consumer, virtual coordinator 10 learns a tendency of the preference of the consumer. It is preferable that the learning is performed when a consumer presses a learning button.

When the learning button is pressed, virtual coordinator 10 rearranges and displays again the model pictures in descending order of consumer's interest according to information filtering described later.

10 Information is filtered with respect to ~~coordinate data~~ coordination data groups of the ~~coordinate concept~~ coordination concept that the consumer selects.

The information filtering is explained herein according to which model pictures are rearranged in descending order of consumer's interest. TheA relationship is acquired between a coordinator identification name, keyword(s) and item data assigned to each ~~coordinate~~ coordination data, and preference of a consumer. Then, ~~how the degree the to which the~~ consumer is interested in each ~~coordinate data~~ coordination data stored in ~~coordinate database~~ coordination database 7 is predicted with a necessity signal having a numerical value. It is thereby possible to represent the preference of the consumer with "AND" of a plurality of coordinator identification names and keywords, and "AND" of a plurality of coordinator identification names and item data, ~~and further~~ as well as other combinations of



information thereof, enabling the preference of the consumer to be precisely represented.

FIG.4 is a block diagram of sections associated with the information filtering ~~of~~ by virtual coordinator

5 10. A model picture of ~~coordinate data~~ coordination data to be evaluated is input to information data input terminal 100. Further, a number-of-keyword signal indicative of the number of keywords contained in the above ~~coordinate data~~ coordination data is input to number-of-keyword

10 signal input terminal 101. Furthermore, a keyword group signal composed of a plurality of keywords is input to keyword signal input terminal 102. The keyword group signal includes ~~is comprised of~~ image keywords, item data and a coordinator identification name of the model picture

15 contained in the coordinate data.

Vector generating section 103 transforms character sequences from a keyword group signal, ~~character sequences~~, to a vector signal V. In order to transform the character sequences to the vector signal V, a character sequence

20 ~~is employed~~ of a code dictionary signal stored in code dictionary storage section 104 is employed. Code dictionary storage section 104 stores character sequences of ~~a plurality of~~ coordinator identification names, image keywords, item data and the like each in a form of the

25 codedictionary signal. When the same character sequence as a character sequence of a jth code dictionary signal is detected from the keyword group signal, "1" is input

to a jth vector component of the vector signal V. When the same character sequence as the character sequence of the jth code dictionary signal is not detected, "0" is input to the jth vector component of the vector signal V. Similar processing is repeated with respect to all the components of the vector signal V.

Positive signal calculating section 105 calculates, using a positive metric signal, a positive signal SY such that a value thereof is large when the keyword group signal contains a large number of keywords that interested the consumer according to the consumer's previous replies~~which the consumer previously replied~~. Negative signal calculating section 106 calculates, using a negative metric signal, a negative signal SN such that a value thereof is large when the keyword group signal contains a large number of keywords that did not interest ~~or disliked~~ the consumer according to the consumer's previous replies~~which the consumer previously replied~~. The positive metric signal stored in positive metric storage section 107 is determined based on the keyword group signal and a ~~result of reply~~ indicating that the consumer has an interest. The negative metric signal stored in negative metric storage section 108 is determined based on the keyword group signal and a ~~result of reply~~ indicating that the consumer has no interest ~~or dislikes~~.

Using the positive signal SY and negative signal

SN, necessity calculating section 109 calculates a necessity signal N according to an equation of  $N = SY - C \square SN$  and further calculates a reliability signal R according to another equation of  $R = C \square SY + SN$ . The necessity signal N has a large value when there are a large number of keywords contained in the ~~coordinate data~~ coordination data (model picture) that previously interested the consumer ~~which the consumer replied previously~~, and there are few keywords contained in the ~~coordinate data~~ coordination data (model picture) that previously did not interest the consumer ~~which the consumer replied previously~~. The coefficient C is used to separate model pictures that the consumer is interested in and model pictures that the consumer is not interested in. The coefficient C is stored in determination parameter storage section 110.

~~Coordinate data~~ Coordination data write control section 111 decides the order of evaluated ~~coordinate data~~ coordination data and writes the ordered ~~coordinate data~~ coordination data in ~~coordinate data~~ coordination data storage section 112. ~~Coordinate data~~ Coordination data storage section 112 stores the ~~coordinate data~~ coordination data arranged in descending order of necessity signal value.

At a stage that the learning is not performed, since the necessity signal N and reliability signal R are not calculated, a plurality of ~~coordinate data~~ coordination data contained in the ~~coordinate concept~~ coordination

concept designated by the consumer is written in ~~coordinate data~~ coordination data storage section 112 without deciding the order. The learning and ordering screen illustrated in FIG.3 is generated using model pictures of the plurality of ~~coordinate data~~ coordination data written in the section 112. It is preferable to generate the learning and ordering screen with a structured document using HTML. The learning buttons are linked with a learning execution file. When the learning button is clicked, a learning request and the consumer input data indicative of whether ~~or not~~ the model picture interests the consumer is collected and transferred to the learning execution file of virtual coordinator 10 ~~as well as a learning request.~~

After the ~~coordinate data~~ coordination data is written in ~~coordinate data~~ coordination data storage section 112, a signal for ~~instructing to start~~ starting virtual ~~coordinate~~ coordination is input to ~~coordinate data~~ coordination data output control section 114 via virtual ~~coordinate~~ coordination start signal input terminal 113.

~~Coordinate data~~ Coordination data output control section 114 generates the learning and ordering screen using the model pictures of the coordinate data. Then, the section 114 transfers the learning and ordering screen from ~~coordinate data~~ coordination data output terminal 115 to consumer interface 8 ~~of the consumer via information~~

communication networks. It may be possible to use HTTP to transfer the structured document of the learning and ordering screen from the e-commerce system to consumer interface 8.

5       The structured document of the learning and ordering screen in FIG.3 is displayed on a display of consumer interface 8. A consumer clicks a button of interest (or disinterest) ~~dislike~~ in each model picture to input a reply for the picture on consumer interface 8. When the  
10   learning button is clicked, the learning request and data (hereinafter referred to as learning signal) indicative of interest -(or dislike disinterest) in the model picture ~~replied by the consumer and the learning request~~ are returned to virtual coordinator 10 via ~~information~~  
15   communication networks. ~~The learning~~ learning execution file is thereby started-up. The learning execution file manages learning processing described later.

When virtual coordinator 10 receives the learning request transmitted from consumer interface 8, the  
20   coordinator 10 fetches a teaching signal T that is transmitted along with the learning request. The teaching signal for each model picture displayed on the learning and ordering screen is stored in teaching data storage section 117 via ~~coordinate data~~ coordination data  
25   output control section 114. Each teaching signal T is stored with a keyword group signal and number-of-keyword signal, each corresponding to the signal T in teaching

data storage section 117.

After the data necessary for the learning is stored in teaching data storage section 117, a learning start signal is input to learning start signal input terminal 5 118. When the learning start signal is input, learning control section 119 turns on switches 122, 123 and 124 to connect metric learning section 120 and learning vector generating section 121.

Metric learning section 120 fetches the teaching 10 signal T, the keyword group signal and the number-of-keyword signal from teaching data storage section 117, and inputs the keyword group signal and number-of-keyword signal to learning vector generating section 121. Learning vector generating section 121 15 transforms the keyword group signal to a learning vector signal LV using the code dictionary signal as well as vector generating section 103. The positive metric signal is corrected based on the learning vector signal LV corresponding to the teaching signal T which indicates 20 interest ~~indicative of interest~~. Meanwhile, the negative metric signal is corrected based on the learning vector signal LV corresponding to the teaching signal T which indicates disinterest ~~indicative of dislike~~.

The positive metric signal thereby has a large value 25 with respect to the keywords (coordinator identification name, item data, image keyword and so on) included in the coordination (model picture) data that interests the

consumer. Similarly, the negative metric signal thereby has a large value with respect to the keywords (coordinator identification name, item data, image keyword and so on) included in the coordination (model picture) data that  
 5 does not interest ~~or dislikes~~ the consumer.

Learning score calculating section 125 operates in a similar way to positive signal calculating section 105 (negative signal calculating section 106), and thereby calculates a learning positive signal LSY and a learning  
 10 negative signal LSN from the learning vector signal LV. Using the learning positive signal LSY and learning negative signal LSN, determination plane learning section 126 obtains the coefficient C that most accurately separates model pictures that interest the consumer and  
 15 model pictures that do not interest the consumer. The coefficient C is expressed on a two-dimensional space using the positive signal SY and negative signal SN. The ~~obtained~~ coefficient C is stored in determination parameter storage section 110. When the learning is  
 20 finished, learning control section 119 outputs a learning finish signal from learning finish signal output terminal 127.

After confirming that the learning finish signal is output, ~~coordinate data~~ coordination data write control  
 25 section 111 again ~~again~~ inputs each model picture, and the keyword group signal and number-of-keyword signal are each assigned to the model picture stored in ~~coordinate~~

~~data—coordination data~~ storage section 112—~~to~~ for  
 respective input terminals 100, 101 and 102. As a result,  
 with respect to each model picture, the necessity signal  
 is calculated which accurately reflects—~~reflecting~~  
 5 interests (preference and taste) of the consumer based  
 on the keywords assigned to the model picture. The model  
 pictures are rearranged in descending order of the  
 necessity signal, and the ordered pictures are ~~stored~~  
 again stored in coordinate data—coordination data storage  
 10 section 112. ~~Coordinate data—~~Coordination data output  
 control section 114 fetches model's pictures from the  
 coordinator data rearranged in descending order of the  
 necessity signal, and generates the learning and ordering  
 screen with the model pictures rearranged in descending  
 15 order of the necessity signal. The section 114 transfers  
 the generated screen to consumer interface 8 to display  
 again.

The consumer looks at the rearranged model pictures,  
 and retrieves a model picture (combination of items)  
 20 matching with the consumer's preference. In addition,  
 the consumer inputs the preference again when necessary.  
 Repeating the processing, i.e., only ~~putting~~ inputting  
 whether ~~or not~~ the picture matches with the consumer's  
 preference, enables the consumer to obtain a combination  
 25 of fashion items matching with the consumer's preference.

In addition, it is also possible to rearrange the  
~~coordinate—data—~~coordination data using the



above-mentioned information filtering to display when the consumer changes the ~~coordinate concept~~ coordination concept during the retrieval.

When the consumer finds out the combination of fashion items matching with the consumer's preference, she/he places an order for the combination of items. In the e-commerce system, when the model picture corresponding to the combination is clicked, an ordering screen as illustrated in FIG.5 is displayed on the consumer interface. Displayed at the upper left of the ordering screen illustrated in FIG.5 is the model picture of the selected ~~coordinate~~ coordination data. Further displayed at the upper right is the fitting data input frame for use in inputting data necessary for choosing a size of a ~~cloth~~ clothing item ~~such as height of the consumer~~. Furthermore, under the fitting data input frame is a frame for displaying a list of the items contained in the selected ~~coordinate~~ coordination data. In the list, a check button is provided for each item to designate an item for which the order is placed. The consumer selects one or more ~~required~~ items with the check buttons, and presses an ordering button.

In addition, it is preferable to provide the list at its beginning with a field of "set of coordination" (coordinated list of items) for use in placing an order for all the items one time. In this case, it is possible to place an order for the combination of coordinated items

collectively, thereby enabling simplified ~~ordering~~ order processing.

After confirming that the ordering button is pressed, virtual coordinator 10 sends ordering data to settlement  
5 person 3, and then writes the fitting data in fitting database 9.

Settlement person 3 checks a payment ability of the consumer, for example, using a credit card of the consumer. Then, the person 3 sends an item ordering  
10 request and an item identification number to the seller via seller authentication section 21, while sending data of the consumer and the item identification number to shipping processing section 12.

When the seller receives the item ordering request,  
15 the seller sends the item to shipping processing section 12 of the e-commerce system.

When shipping processing section 12 receives the item, the section 12 searches item identification numbers stored therein for an item identification number ~~according~~  
20 corresponding with that attached to the item. Then, the section 12 reads the data of the consumer that places an order for the item designated with the item identification number, and ships the item to the consumer. At this point, the section 12 sends the item identification  
25 number and the data of the consumer to return processing section 13.

The consumer receives the item. When the consumer

wants to return the item, she/he returns the item to the e-commerce system within a predetermined period.

When return processing section 13 does not receive a returned item ~~attached the item identification number~~ in the predetermined period starting from the time of receiving the item identification number from shipping processing section 13, the section 13 transmits a signal ~~indicative of~~ indicating the item identification number and ~~of~~ that the item is not returned to settlement person 3.

Settlement person 3 who receives the signal ~~indicative~~ indicating ~~of~~ the item identification number and ~~of~~ that the item is not returned performs a procedure for settling a payment of the corresponding item via consumer authentication section 23. Then, settlement person 3 pays the charge to the seller who sells the ordered item, while paying the ~~coordinate~~ coordination charge to the coordinator who generates the ~~coordinate data~~ coordination data used in the order. Further, settlement person 3 stores data concerning the item in consumer database 11.

When return processing section 13 receives the returned item ~~attached the item identification number~~ in the predetermined period starting from the time of receiving the item identification number from shipping processing section 12, the section 13 returns the item to the seller, while transmitting a signal ~~indicative~~

~~indicating of~~ the item identification number and ~~of~~ that the item is returned to settlement person 3.

When settlement person 3 receives the signal ~~indicative of~~ indicating the item identification number and ~~of~~ that the item is returned, the person 3 transmits a signal ~~indicative of~~ indicating that the item is returned and ~~of the coordinate data~~ coordination data indicating the combination of items to virtual coordinator 10 of the consumer.

10       The information of the consumer returning the item is ~~indicative of~~ that the returned item, which is judged to match with the preference of the consumer at the time of placing its order, actually does not match with the preference of the consumer. Therefore, virtual  
15 coordinator 10 rewrites data to indicate that ~~indicative of the preference of the consumer to be the same as the case that the consumer judges~~ the item does not match with the preference of the consumer with respect to the coordinate data. Then, virtual coordinator 10 stores  
20 return data concerning the item in consumer database 11.

Thus ~~reflecting~~ information on an item returned from a consumer enables consideration of an evaluation ~~on~~ the item actually shipped to the consumer and then returned ~~be reflected~~. It is thereby possible to retrieve  
25 ~~coordinate data~~ coordination data matching with the preference of the consumer.

When the consumer later uses virtual coordinator

10 ~~at the second time and thereafter~~, virtual coordinator  
10 preferentially presents to the consumer the ~~coordinate~~  
~~data~~ coordination data expected to match with the  
preference of the consumer using the information filtering  
5 with the preference of the consumer stored previously.

In the embodiment as described above, virtual  
coordinator 10 decides the order of a plurality of items  
of ~~coordinate data~~ coordination data contained in a  
~~coordinate concept~~ coordination concept designated by a  
10 consumer based on the reply of the consumer, however,  
it may be possible to present those in turn without deciding  
the order. Also in this case, it is possible for a consumer  
to select ~~one~~ from combinations coordinated by an expert  
(coordinator) having sufficiently detailed knowledge on  
15 items even without the order being decided by virtual  
coordinator 10. Therefore, ~~whereby~~ it is possible for  
the consumer to find ~~out~~ an appropriate combination of  
items matching with the preference and taste of the  
consumer among huge amounts of information even when the  
20 consumer is not able to obtain sufficiently detailed  
information on the items.

According to the present invention as described  
in detail above, it is possible to present appropriate  
combinations of items matching with the preference and  
25 taste of a consumer even when the consumer is not able  
to obtain sufficiently detailed information on the items,  
and as a result to provide an e-commerce system which

achieves a decreased rate of returned items.

The present invention is not limited to the above described embodiments, and various variations and modifications may be possible without departing from the  
5 scope of the present invention.

This application is based on the Japanese Patent Application No. HEI11-362521 filed on December 21, 1999, entire content of which is expressly incorporated by reference herein.

~~What is claimed is:~~

- ~~1. An electronic commerce system using an information communication network, comprising~~  
~~an item database with which a seller registers items~~  
5 ~~composing a product in a combination of the items to open to the public for a coordinator;~~  
~~a coordinate database with which the coordinator registers combinations of items that the coordinator coordinates using the items registered with the item~~  
10 ~~database; and~~  
~~a settlement mechanism that opens the coordinate database to the public for a consumer to receive an order of an item from the consumer, while clearing up payments of a charge from an account of the consumer and to the~~  
15 ~~seller when transaction is completed.~~
- ~~2. The electronic commerce system according to claim 1, further comprising:~~  
~~at least one virtual coordinator which assists the consumer in searching the coordinate database according~~  
20 ~~to a request from the consumer.~~
- ~~3. The electronic commerce system according to claim 2, wherein the virtual coordinator presents the combinations of items coordinated to the consumer, receives a response indicative of whether the consumer~~  
25 ~~is interested in each presented combination of items, and based on the reply from the consumer, searches for a combination of items coordinated suitable for a~~

~~preference of the consumer.~~

4. ~~The electronic commerce system according to claim~~  
3, ~~wherein when an item is returned from the consumer~~  
~~who purchased the item, the virtual coordinator searches~~  
5 ~~for a combination of items coordinated suitable for the~~  
~~preference of the consumer in which information on a~~  
~~returned item is reflected.~~

5. ~~The electronic commerce system according to claim~~  
1, ~~wherein a concept board on which concepts of the~~  
10 ~~coordinator are displayed is open to the public for the~~  
~~coordinator, and combinations of items coordinated~~  
~~according to the concepts are registered with the~~  
~~coordinate database for each concept.~~

6. ~~The electronic commerce system according to claim~~  
15 2, ~~wherein the coordinate database stores coordinate data~~  
~~coordination data having combinations of items~~  
~~coordinated, and image words and coordinator~~  
~~identification name, attached to respective combinations,~~  
~~which the coordinator assigns to each combination of items~~  
20 ~~coordinated, and the virtual coordinator fetches item~~  
~~data, an image word and the coordinator identification~~  
~~name contained in each combination of items coordinated~~  
~~as keywords, and searches for a combination of items~~  
~~suitable for a preference of the consumer corresponding~~  
25 ~~to a degree of keywords being contained in the coordinate~~  
~~data coordination data replied from the consumer on~~  
~~whether the data interests the consumer.~~



~~7. The electronic commerce system according to claim 1, wherein the consumer is capable of placing an order for the combination of items coordinated collectively.~~

~~8. The electronic commerce system according to claim 1, wherein items to be coordinated are invited and open to the public on a web server.~~

~~9. The electronic commerce system according to claim 1, wherein concepts of coordination are invited and open to the public on a web server.~~

~~10. A seller terminal for use by a seller in registering items composing a product in a combination of the items, wherein the seller accesses to accesses the electronic commerce system according to either of claims 1 to 9 via an information communication network to be authenticated to access to the system, and registers the items with the item database.~~

~~11. A consumer terminal for use by a consumer in searching for and placing an order for one or more items composing a product in a combination of the items, wherein the consumer accesses to accesses the electronic commerce system according to either of claims 1 to 9 via an information communication network to register the consumer with the system to be a purchaser, receives a plurality of combinations of items coordinated which are presented from the electronic commerce system, and places an order for an item among the combinations of the items presented.~~

~~12. An electronic commerce method using an information communication network, comprising the steps of:~~

~~— registering by a seller items composing a product in a combination of the items with an item database to~~

5 ~~open to the public for a coordinator;~~

~~— registering by the coordinator combinations of items that the coordinator coordinates using the items registered with the item database with a coordinate database; and~~

10 ~~— opening the coordinate database to the public for a consumer to receive an order of an item from the consumer, while clearing up payments of a charge from an account of the consumer and to the seller when transaction is completed.—~~

15 -

~~ABSTRACT OF THE DISCLOSURE~~

~~—The electronic commerce system enables a seller to register items composing a product in a combination of the items with an item database, further enables a~~  
5 ~~coordinator to coordinate the combination of the items based on registered items, and stores the combination of items in a coordinate database. Meanwhile, the system opens the coordinate database to the public for a consumer to receive an order of an item from the consumer, and~~  
10 ~~clears up payments of the charge from an account of the consumer to the seller when the transaction is completed.~~

## FIG.1

~~□□ REGISTRATION~~~~□□ RETURN~~~~□□□□ READ~~5 ~~□□ ORDER~~~~□□ PAYMENT~~~~□□ SHIPPING~~~~□□ PAYMENT~~~~□□ SEARCH~~10 ~~□□□□ RETURN PROCESSING~~~~□□ DISPLAY~~

## SELLER

1 ~~—— SELLER I/F~~15 2 ~~—— ITEM DB~~3 ~~—— SETTLEMENT PERSON~~

DISPLAY

4 ~~—— CONCEPT BOARD~~

COORDINATOR

20 5 ~~—— COORDINATOR I/F~~6 ~~—— IMAGE-WORD DB~~7 ~~—— COORDINATE DB~~8 ~~—— CONSUMER I/F~~

CONSUMER

25 9 ~~—— FITTING DB~~10 ~~—— VIRTUAL COORDINATOR~~11 ~~—— CONSUMER DB~~

- ~~12 SHIPPING PROCESSING SECTION~~
- ~~13 RETURN PROCESSING SECTION~~
- ~~21 SELLER AUTHENTICATION SECTION~~
- ~~22 COORDINATOR AUTHENTICATION SECTION~~
- 5 ~~23 CONSUMER AUTHENTICATION SECTION~~

~~FIG.2~~

- ~~MODEL PICTURE INPUT FRAME~~
- ~~FITTING DATA INPUT FRAME~~
- 10 ~~COORDINATE DATABASE REGISTRATION~~
- ~~ITEM DATA INPUT FRAME~~
- ~~IMAGE-WORD INPUT FRAME~~

~~FIG.3~~

- 15 ~~LEARNING~~
- ~~MODEL PICTURE~~

~~FIG.4~~

- ~~103 VECTOR GENERATING SECTION~~
- 20 ~~104 CODE DICTIONARY STORAGE SECTION~~
- ~~109 NECESSITY CALCULATING SECTION~~
- ~~110 DETERMINATION PARAMETER STORAGE SECTION~~
- ~~111 COORDINATE DATA COORDINATION DATA WRITE CONTROL SECTION~~
- 25 ~~112 COORDINATE DATA COORDINATION DATA STORAGE SECTION~~
- ~~114 COORDINATE DATA COORDINATION DATA OUTPUT CONTROL SECTION~~

~~117~~ ~~TEACHING DATA STORAGE SECTION~~  
~~119~~ ~~LEARNING CONTROL SECTION~~  
~~120~~ ~~METRIC LEARNING SECTION~~  
~~121~~ ~~LEARNING VECTOR GENERATING SECTION~~  
5 ~~125~~ ~~LEARNING SCORE CALCULATING SECTION~~  
~~126~~ ~~DETERMINATION PLANE LEARNING SECTION~~

FIG.5

~~MODEL PICTURE~~

10 ~~FITTING DATA INPUT FRAME~~

~~ORDER~~

~~ITEM DATA~~